Introducing I³CON

The Information Interpretation and Integration Conference

LOCKHEED MARTIN

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I³CON: Motivation

- Semantic integration will be one of the first major accomplishments for ontology-based applications
  - Heterogeneous information system and resource Interoperability is a major concern for military, government, industry
  - Many view this as the a fundamental technical challenge of the Semantic Web
- To answer this challenge, there have been new developments in automated ontology and schema:
  - Markup
  - Alignment
  - Merging
  - Translation
  - Learning
- Much of this research has been funded by DARPA programs, but today the largest sponsors are EU programs

I³CON: Observation

- **Semantic integration research community resembles the text retrieval community of 15 years ago**
  - Critical mass of globally distributed research programs
  - Large variety of technical approaches
  - Generally, but not universally, accepted metrics
  - No meaningful basis of evaluating one technical approach over another
- **The success of text retrieval technology was due in large measure to the Text Retrieval Conference (TREC)**
  - Promoted well-defined concepts for measuring success
  - Clarified metrics
  - Established realistic benchmarks
  - Created canonical challenge problems

The NIST TREC model has a proven record of success!

NIST TREC Model

1. Define the metrics
2. Develop experiment format for easy participation by researchers
3. Create development data sets and test data sets; publish the former
4. Distribute test data sets to experiment participants
5. Collect automatically generated results data
6. Collate and compare results data
7. Hold assessment workshop and end of cycle

I³CON: Timeline

- **March 2004:** Met with NIST, "pilot" conference as PerMIS special session proposed
- **March-June 2004:**
  - Formed Organizational Committee
  - Recruited participants
  - Created ontology alignment format
  - Developed test ontology pairs
  - **May 25:** Gave presentation at DAML PI Meeting
- **June 15 2004:** Released test ontology pairs
- **July 16, 2004:** Collected alignment results data
- **July 16-August 20, 2004:** Compiled and analyzed results data
- **August 25, 2004:** I³CON special session at PerMIS

http://www.atl.lmco.com/projects/ontology/i3con.html

I³CON and the TREC Model

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→Precision, Recall, fMeasure

→Ontology Alignment Ontology; Experiment Set Platform

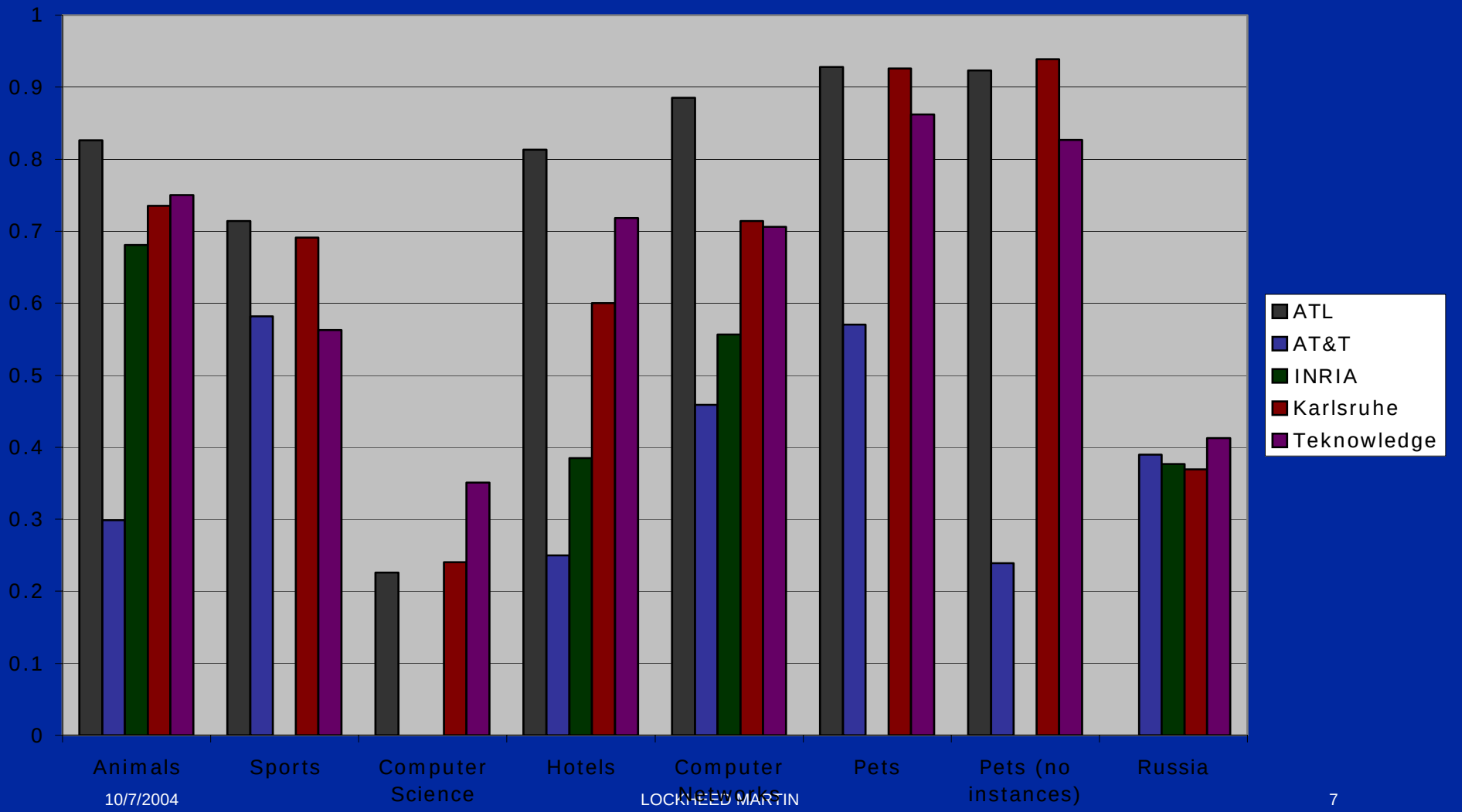
→2 development ontology pairs; 8 test ontology pairs

→5 participants

→Most participants submitted alignment data for all ontology pairs

→Where we are today

I³CON: Experiment Results Overview



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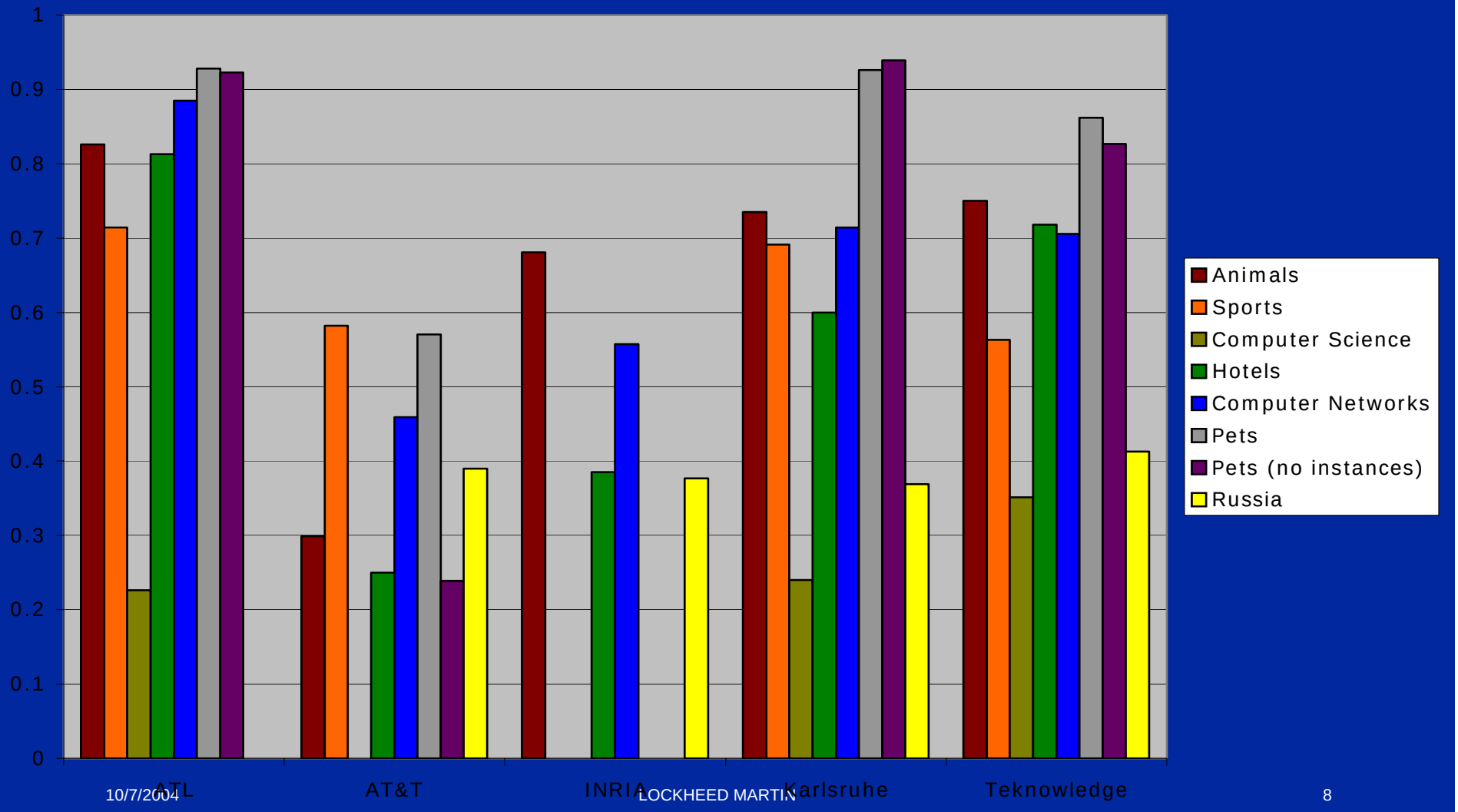

I^{3}CON Experiment: Lessons Learned

- No single technical approach performed best on *all* test ontology pairs
- No single ontology pair was best for *all* technical approaches
- All approaches performed >0.5 fMeasure on at least one ontology pair
- All approaches performed <0.5 fMeasure on at least one ontology pair

There is much more to be learned from the I3CON experiment data.

I³CON: Special Thanks

- **Organizational Support**
  - Larry Reeker (NIST)
  - Elena Messina (NIST)
- **Technology and Data**
  - Ben Ashpole (ATL)
  - Liz Palmer (ATL)
  - Emil Macarie (ATL)
  - Yun Peng (UMBC)
  - Rong Pan (UMBC)
- **Experiment Participants**
  - Jerome Pierson (INRIA)
  - John Li (Teknowledge)
  - Lewis Hart (AT&T)
  - Marc Ehrig (University of Karlsruhe)
- **Guest Speakers**
  - Bill Andersen (Ontology Works)
  - Mike Pool (Information Extraction and Transport)
  - Yun Peng (University of Maryland Baltimore County)
  - Mike Gruningner (University of Maryland)

EON 2004

- **Evaluation of Ontology-based Tools 3rd International Workshop**
  - **http://km.aifb.uni-karlsruhe.de/ws/eon2004/**
- **Located at the 3rd International Semantic Web Conference (ISWC 2004)**
  - **November 8, 2004**
  - **Hiroshima Prince Hotel, Hiroshima, Japan**
- **EON Ontology Alignment Experiment**
  - **Provides participants with a complete test base of ontology pairs**
  - **Test is based on one particular ontology dedicated to a very narrow domain and a number of alternative ontologies of the same domain**